Water and the shale and tight gas industry

About the Department of Water

The Department of Water is the state government agency that looks after Western Australia’s water resources. We support Western Australia’s community, economy and environment by managing the state’s water resources sustainably.

Through rigorous science and monitoring at almost 4000 sites across the state, we determine what surface and groundwater resources are available. We manage and regulate the access to water resources for drinking water, communities, public open space, agriculture, mining, industry and commerce across the state.

Our role assessing shale and tight gas

The Department of Water has three main functions when it comes to shale and tight gas activities:

1. Protect water resources and public drinking water supplies.
2. Determine water availability, evaluate proposed water wells and water licence applications and allocate fairly and equitably (including setting licence conditions).
3. Provide independent water-related advice and expertise to the Department of Mines and Petroleum, the Environmental Protection Authority, other decision-making bodies and industry.

All petroleum activities, including hydraulic fracture stimulations (‘fraccing’) for shale and tight gas, are regulated by the Department of Mines and Petroleum. The Department of Mines and Petroleum refers mining and petroleum (including shale and tight gas) proposals to the Department of Water for water-related advice, through an administrative agreement.

We understand community concerns about potential risks associated with the shale and tight gas industry. Our approach is to undertake rigorous, science-based assessments of proposals to ensure stringent safeguards are in place to protect the environment and community.
Water licences

The Department of Water manages the ‘taking of water’ through water licences in Western Australia. Other activities which involve accessing or interacting with water (including constructing water bores) may also require a licence.

We follow the same, strict process for assessing any water licence application, regardless of the proposed industry or use. The Department of Water will not grant licences when there is an unacceptable risk to the water resource and insufficient measures in place to control that risk.

Anyone granted a water licence must meet the terms and conditions of their licence and are subject to the Department of Water’s standard compliance and enforcement processes.

Science behind our assessments

The Department of Water uses many different types of scientific research to build a picture of water resources and understand the potential impact of proposed activities.

- Geology and hydrogeology: location of aquifers, current and future water requirements for the region, catchment areas and underground water reserves.
- Type of proposed activity (e.g. a seismic survey to look underground, construction of a well or bore).
- Science: understanding the chemicals used and likely behaviour in water.
- Contingency plans.
- Required permits and licences.
- Monitoring programs (including baseline studies).
- Water licences state the amount of water a licence holder can remove from the well – this does not occur in hydraulic fracturing operations.

What does the Department of Water consider when assessing a proposal?

For any shale and tight gas activity proposal, the proponent must outline their intended activity and the safeguards and monitoring they will put in place to manage any possible risks.

For more information, see the Environmental Protection Authority’s Bulletin 22 – Hydraulic fracturing for onshore natural gas from shale and tight rocks.

FAQs

What is fraccing?

Natural gas found in shale and tight rock formations is trapped and cannot flow freely, so a different process is needed to recover the natural gas from the ground.

Hydraulic fracture stimulation (fraccing) is an underground oil and gas extraction process used to stimulate the flow of oil and gas. In shale and tight gas activity, this process creates fractures in the gas-bearing rocks to create a path for the natural gas.

What are the risks to water resources from fraccing?

Risks to water resources associated with fraccing can include:

- Shale and tight gas well integrity failure.
- Chemicals being released at depth (including naturally occurring chemicals being mobilised).
- Wastewater moving into water resources.
- Chemicals and other hazardous materials being spilled on the ground (due to movement, storage or use) and infiltrating into groundwater resources.

When evaluating mining and petroleum proposals (including for shale and tight gas), the Department of Water examines whether effective safeguards and conditions are in place to manage these risks. Examples include water testing and monitoring programs and physical barriers, such as steel and cement casings enclosing the well bore.

Find out more information bit.ly/DMWInfosheet

Fast facts

- Water reserves, catchment areas and underground water pollution control areas are collectively known as public drinking water source areas.
- The Department of Water manages these areas by inspecting, controlling and prohibiting activity that may impact on water quality and protection.
- Water licences state the amount of water a licence holder may use for a certain activity. The Department of Water sets these limits to ensure that water resources are protected and sustainably managed, and that water is available for use by a range of licence holders.
- The use of chemicals in the oil and gas industry is regulated by the Commonwealth and state government agencies to ensure chemicals are managed, stored, transported and disposed of in an appropriate, safe and environmentally responsible manner.
- Shale and tight gas is not the same as coal seam gas. Coal seam gas often occurs at much shallower depths than shale and tight gas. To extract coal seam gas, the groundwater is removed from the well – this does not occur in shale and tight gas extraction. The Department of Mines and Petroleum has stated that there are currently no known economically viable coal seam gas reserves in WA.
- Hydraulic fracturing may use water (fresh, brackish or saline) and the resulting fluid can be retreated and reused. This can only be done under strict conditions for use and disposal. Anywhere from 10 to 40% of the fluid used in hydraulic fracture stimulation will be returned to the surface for shale gas and up to 70% for tight gas operations. This water can be reused in further drilling and hydraulic fracturing operations.
Geology and hydrogeology: location of aquifers, chemicals being released at depth (including the use of chemicals in the oil and gas industry)

Gather more information if needed. Consider the application against our background

Shale and tight gas is not the same as coal

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Some of the issues to be addressed with any proposal include:

- Type of proposed activity (e.g. a seismic survey to look underground, construction of a well or bore).
- How close the proposed activity is to key geological features, existing water bores and public drinking water source areas.
- Possible risks to public drinking water and other water resources.
- Current and future water requirements for the project.
- The petroleum well design – to ensure aquifers are isolated.
- Possible impacts on natural barriers between aquifers and fraccing zone.
- Suitability of proposed wastewater management.
- Monitoring programs (including baseline studies).
- Contingency plans.
- Required permits and licences.

Once a proposal has been referred to the Department of Water for advice, we:

- Evaluate the information from the proponent.
- Consider the application against our background information, including years of scientific research and local knowledge.
- Gather more information if needed.
- Make a recommendation on the proposal.

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